

TAKING ANIMALS INTO ACCOUNT

The Crucial Role of Wild Animals in Wetland Ecosystems and the Services they Provide

CASE STUDIES

*A summary for public understanding
Geneva, 2 February 2025*



WETLANDS NEED WILD ANIMALS



Today, on World Wetlands Day, ten partners of the Global Rewilding Alliance are launching a new report “Taking Animals into Account” on the urgent need to protect and rewild a wide range of inland and coastal wetlands, with a focus on bringing back critical animal species to make these vital ecosystems healthier and more functional again.

Wetlands are widely renowned as crucial ecosystems that support biodiversity, regulate water cycles, store carbon, and provide resilience to flooding and droughts, but lesser known are the **critical roles wild animal species play to make this all possible.**

Through an extensive literature review, a new study provides evidence of how animals act as ecosystem engineers - species that have a particularly strong effect on the health of ecosystems. These species help to diversify habitats for other species, increase nutrient cycling and ecosystem productivity, disperse seeds and other organisms, improve food webs, and other, so called, ecosystem services.

The report summarises **11 pivotal case studies that uncover the intricate ways that species help to keep wetland ecosystems healthy.** These studies serve as vital empirical evidence for the successful application of rewilding principles, demonstrating tangible benefits of species reintroduction and habitat restoration.



SWEDEN

RIVER ECOSYSTEM RESTORATION

Conservation of Freshwater Pearl Mussel, Atlantic Salmon, and Brown Trout



Rewilding Sweden is leading efforts to restore riverine ecosystems by revitalizing habitats crucial for the survival of the **Freshwater Pearl Mussel**, a keystone species that plays a vital role in water purification and ecosystem health. These mussels **filter up to 50 liters of water per day, enhancing water quality** while providing essential nutrients that support juvenile **Atlantic Salmon** and **Brown Trout**. Their shells create microhabitats for water mosses and invertebrates, further boosting biodiversity. However, **Mussels** depend on healthy fish populations, as their larvae require young Salmon and Trout to develop. With habitat degradation, siltation, and land use changes threatening all three species, urgent conservation action is needed.

To combat these challenges, Rewilding Sweden is restoring natural river dynamics by reintroducing boulders, encouraging natural meandering, and promoting native vegetation. The restoration of swamp forests and wetlands improves water retention, stabilizes ecosystems, and enhances resilience against climate change. Species recovery efforts include **reintroducing Brown Trout**, enriching riverbeds with natural materials to support benthic fauna, and temporarily relocating Mussels during restoration activities. These actions are improving water quality, revitalizing ecosystems, and strengthening populations of endangered species.

The conservation of the Freshwater Pearl Mussel, Atlantic Salmon, and Brown Trout is **essential for maintaining the health and resilience of river ecosystems**. Their interconnected survival depends on a landscape-scale approach that restores both species and habitats. By addressing historical degradation and modern threats, Rewilding Sweden's integrated conservation strategy is ensuring the **long-term survival of these keystone species** and the broader biodiversity they support.



COASTAL WETLAND INTEGRATION

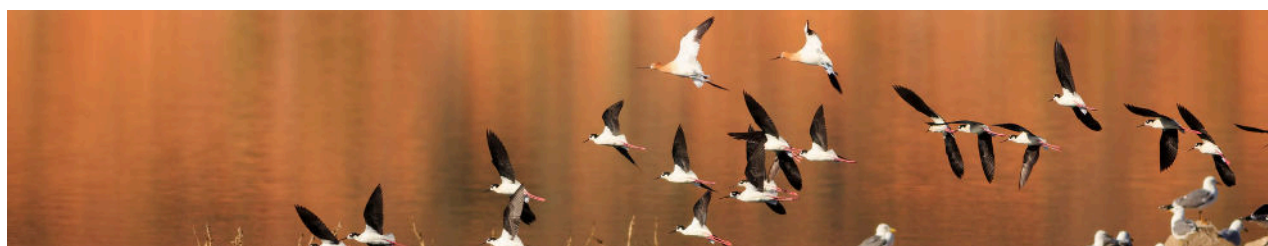
Shorebirds and Père David's Deer Shape Coastal Wetlands



Shorebirds and **Père David's Deer** play essential roles in maintaining and restoring coastal wetland ecosystems by influencing sediment stability, nutrient cycling, and biodiversity. Shorebirds regulate prey populations, graze biofilms, and disturb sediment, contributing to primary production and ecosystem resilience. Père David's deer, **reintroduced** in China's coastal wetlands, help control invasive *Spartina alterniflora*, facilitating native vegetation recovery and enhancing habitat diversity. The combined impacts of the shorebirds and deer provide key ecosystem services, including **carbon sequestration, sediment stabilization, and improved water quality**.

Field studies in China's Yellow Sea and Canada's Bay of Fundy suggest that shorebirds can promote vegetation recovery by controlling crab and mud shrimp populations, while Père David's deer improve wetland structure by modifying plant cover and influencing water and nutrient cycling. However, the long-term effectiveness of these species in large-scale wetland restoration remains speculative.

It is uncertain whether Père David's deer alone can fully restore wetland ecosystems or whether shorebirds' impact on vegetation recovery is sustainable over time. Further research is needed to determine the broader implications of their roles in ecosystem resilience. Despite these uncertainties, their contributions **highlight the potential for integrating species-driven restoration strategies** into wetland conservation efforts.



NETHERLANDS

HERBIVORES AND WETLAND HABITATS

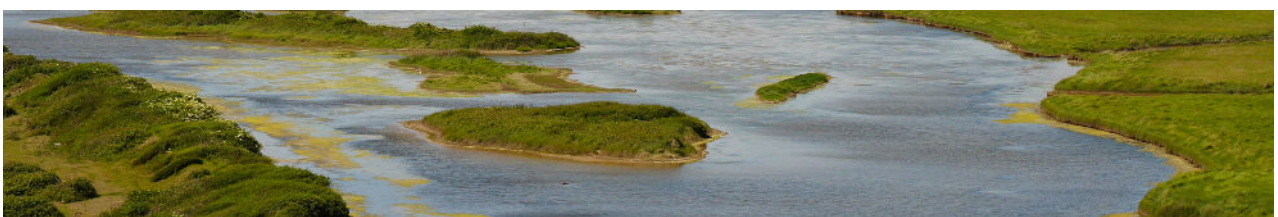
The Effect of Larger Terrestrial Herbivores on Wetland Habitats



ARK Rewilding has over 35 years of **rewilding** practice, and operates in various global locations, demonstrating the significant ecological impacts of large terrestrial herbivores on wetland habitats.

Elephants, for instance, actively prevent woodland encroachment by converting forests into grazing lands, maintaining open landscapes vital for biodiversity. **Hippos, Horses, and Bovines** contribute by creating high-quality grazing areas from coarse grasses, which promotes regrowth attractive to deer and antelope, helping to control woodland expansion further. Seasonal flooding and nutrient-rich deposits from migratory fish also play a role in reducing woodland areas, creating fertile habitats that attract large herbivore populations. **Beavers**, particularly noted for their transformative impact on wetland environments, build dams that generate ponds, increase sedimentation, and alter water flows. These activities initiate a cycle of habitat creation and regeneration, providing rich areas that support a variety of species from fish to large mammals and birds. **Water Buffalo** and other large herbivores manage swamp edges and submerged vegetation, creating varied ecological zones that support a diverse range of aquatic and semi-aquatic species.

Through strategic management of herbivore populations, ARK's long-term **rewilding efforts both support ecological diversity and also maintain open, dynamic landscapes** crucial for the health of wetland ecosystems.



SCOTLAND

BEAVER-LED WETLAND ENGINEERING

The Eurasian Beaver as an Ecosystem Engineer



Bamff Wildland, situated on the Scottish Highlands' edge, has spearheaded significant conservation initiatives since the 2002 reintroduction of **Eurasian Beavers**. Initially placed in enclosures along a straightened farm drainage ditch, these beavers have reshaped the landscape, enhancing biodiversity and ecosystem resilience. This project established Bamff as Scotland's most seasoned beaver reintroduction site.

In 2020, Bamff expanded its conservation efforts by removing around 300 sheep from 12 fields and installing a perimeter fence around a third of the estate to create a 170-hectare 'Bamff Wildland.' This area, comprising fields, woodlands, and extensive beaver-engineered wetlands, adopts a 'catalysed rewilding' approach. This method involves minimal interventions, such as native tree planting and invasive species control, to encourage a self-sustaining ecosystem.

The project also introduced native **Cattle** and **Pigs** as proxies for extinct Aurochs and Wild Boars. By 2024, a breeding herd of **Exmoor Ponies** was added to simulate the effects of large wild herbivores. These initiatives aim to restore the complex interactions essential for ecosystem health, utilizing beavers' natural behaviours to boost habitat diversity and function.

With ongoing ecological monitoring and partnerships with institutions like Stirling University, **Bamff serves as a vital research base for studying and disseminating effective rewilding practices**. This approach not only nurtures local biodiversity but also enhances the global understanding of rewilding.



GLOBAL CROCODYLIANS' ECOLOGICAL ROLES

The (Little-Known) Ecological Roles of Crocodylians



While the ecological roles of large freshwater predators like crocodylians are less understood compared to their terrestrial and marine counterparts, emerging studies highlight their potential positive impacts on ecosystem health. **Crocodylians**, which include 27 species across families such as **Crocodylidae**, **Alligatoridae**, and **Gavialidae**, inhabit a variety of aquatic environments like lowland rivers, estuaries, and lakes in approximately 100 countries. Their unique reliance on terrestrial habitats for nesting establishes vital cross-ecosystem linkages.

Crocodylians are among the largest predators in their habitats, with some species exceeding 5 meters in length and weighing over 500 kilograms. They act as ecosystem engineers, modifying habitats by constructing dens, holes, and mound nests. These activities not only impact local biodiversity but also create essential refuges and breeding sites for a wide range of other species, enhancing habitat structure and diversity. Although often underappreciated, these contributions highlight Crocodylians' role in maintaining the ecological balance and supporting the health of aquatic systems. Their presence in ecosystems like the Florida Everglades serves as a barometer for water management and hydrological functions, highlighting their potential as ecosystem health indicators.



However, their seemingly significant ecological roles is based on limited evidence. **Future research should focus on filling these gaps with targeted, hypothesis-driven studies.**



ITALY

FRESHWATER BIODIVERSITY CONSERVATION

Recovery of Native Crayfish Populations and Freshwater Biodiversity



The Central Apennines in Italy host diverse aquatic ecosystems, home to the endangered **White-Clawed Crayfish**, a key species that plays a vital role in maintaining water quality and supporting food webs by feeding on decaying matter and controlling invertebrate populations. However, due to habitat loss, pollution, and invasive crayfish species carrying deadly diseases like crayfish plague, populations have declined by 74% in the last decade, making urgent conservation efforts necessary.

Rewilding Apennines has taken action to **restore the species** through breeding centers and habitat rehabilitation. The centers follow the crayfish's natural reproductive cycle, ensuring successful mating, egg incubation, and the release of juveniles into restored habitats. Since 2014, over 5,000 juvenile crayfish have been reintroduced into the Verde River, showing signs of natural reproduction. Additional efforts include the removal of barriers in degraded streams to protect key wetland areas.

While early results are promising, continued monitoring, habitat restoration, and invasive species control are essential for the crayfish's long-term survival.



PHOTO CREDIT: BRUNO D'AMICIS



INDIA

SARUS CRANE ECOSYSTEM SERVICES

Sarus Crane Recovery Influence on Wetland Ecosystem Services



PHOTO CREDIT: HARI K PATIBANDA

The Ganges River basin hosts diverse wetlands vital for biodiversity, including the **culturally significant but vulnerable Sarus Crane**, which depends on both natural and man-made wetlands. Habitat destruction has forced these cranes to breed in rice paddies, despite lower breeding success.

The Sarus Crane serves as a key indicator of wetland health. Conservation efforts in eastern Uttar Pradesh by the Wildlife Trust of India have protected 700+ nests, leading to an 8% annual population growth from 650 (2013) to 2,600 (2024). The project safeguards wetlands, engages locals in biodiversity monitoring, and promotes community-led conservation.

Cranes provide crucial ecosystem services, including habitat enhancement, nutrient cycling, and biodiversity support. Their foraging behaviour increases plant diversity, prevents invasive species, and benefits insect populations. At times, Sarus Cranes positively contribute to agriculture by improving soil conditions and aiding early crop cultivation.

The species symbolize fidelity and feature in folklore, and can help boost ecotourism, fostering positive human-wildlife interactions. **Leveraging this local support can improve the species' breeding success.**



PHOTO CREDIT: SANTANU SEN



INDIA

ECOLOGICAL ROLES OF LARGE FISHES & REPTILES

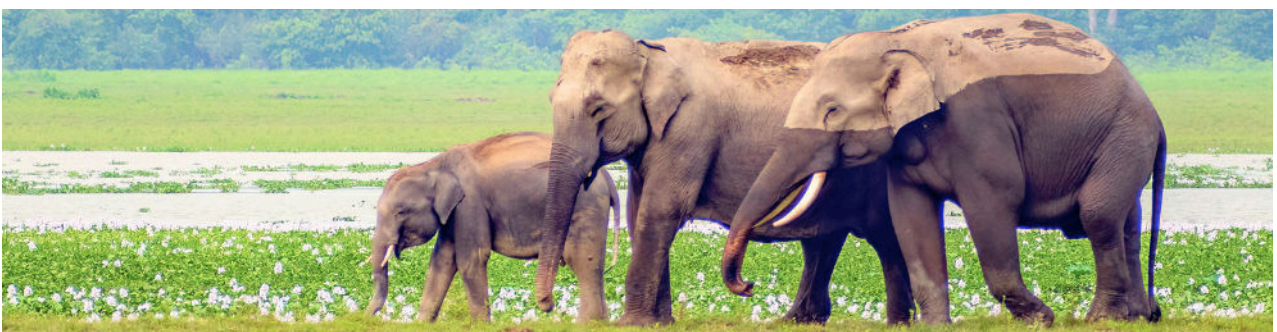
National Chambal Sanctuary Protects India's Diverse Aquatic Life



The National Chambal Sanctuary in India, a key conservation area along the Chambal River, shelters nearly 85% to 90% of the world's **Gharial** population and the entire population of the critically endangered **Red-Crowned Roofed Turtle**. It also supports stable populations of **Marsh Crocodiles**, **Smooth-Coated Otters**, **Ganges River Dolphins**, and **Indian Skimmers**.

India's aquatic landscapes also host about 20 species of freshwater turtles and numerous large fishes such as catfish and carp, along with terrestrial megafauna like **Asian Elephants**, **Greater One-horned Rhinoceros**, and **Asiatic Wild Buffalo**, and marine herbivores such as **Dugongs**, significantly impact these ecosystems. Their roles in nutrient cycling and plant dynamics through interactions like herbivory are vital for the health and functionality of these aquatic systems. The **Marsh Crocodile** has been **reintroduced** into various water bodies across India, including rivers, wetlands, and man-made reservoirs, as part of conservation efforts to restore and stabilize its populations in their natural habitats.

Despite threats from habitat destruction, pollution, and climate change, protected areas like Chambal are crucial for the ongoing health of India's diverse ecosystems, ensuring the survival of both aquatic and semi-aquatic species. **Future research will delve into the complex trophic functions and predator-prey dynamics**, particularly in places like the Chambal River, to better understand wildlife roles in ecosystem recovery and the broader effects of biodiversity loss and habitat changes.



ARGENTINA

TOP PREDATORS & ECOSYSTEM HEALTH

Restoring Balance: The Role of Key Species in Revitalizing the Iberá Wetlands



The Iberá Wetlands in the Corrientes province of Argentina, is one of the largest freshwater subtropical wetlands in South America, spanning over 1.3 million hectares. Home to a diverse array of species, these wetlands include marshes, lagoons, small rivers, and forests. Despite their rich biodiversity, Iberá has experienced significant ecological disruptions from human activities such as agriculture, cattle ranching, and exotic forestry, leading to considerable biodiversity losses and prompting extensive restoration efforts by Rewilding Argentina.

Rewilding Argentina's initiatives focus on land protection through purchasing critical private lands and **reintroducing key species** like **Jaguars** to help control the **Capybara** population and restore natural trophic cascades that balance ecosystem dynamics. Species such as **Caimans**, **Giant River Otters**, **Collared Peccaries**, and **Marsh Deer** play crucial roles in nutrient cycling and ecosystem engineering, maintaining balance and enhancing biodiversity through their natural behaviours. These efforts are also supported by developing ecotourism infrastructure to economically engage local communities. **This comprehensive approach not only aids in species recovery but also ensures sustainable coexistence between humans and nature.**



UKRAINE

DANUBE DELTA REWILDING

Grazing for growth and biodiversity in the Danube Delta



As the largest remaining natural wetland and the second largest river delta in Europe, the Danube Delta is a designated Biosphere Reserve and one of the most crucial habitats for wetland wildlife on the continent. The area has undergone significant ecological changes primarily due to the decline in natural herbivores and the collapse of extensive farming practices. This shift has led to the proliferation of dense reed monocultures, drastically reducing the area's biodiversity, once vibrant in its grasslands, meadows, and salt marshes. Despite these challenges, the presence of feral herds of cattle and horses roaming in some protected areas has been beneficial to the biodiversity and vegetation.

Rewilding efforts emphasize natural grazing systems. **Ukrainian Grey Cattle** and **Hutsul Horses** manage the landscape effectively by controlling reed encroachment, maintaining riverine levees, and fostering meadow habitats. This strategy not only curbs dense reed bed growth but also promotes diverse meadow development, enhancing accessibility and ecological diversity, thereby boosting local eco-tourism. On Ermakov Island, a wider array of reintroduced species, including **Water Buffalo** and **Konik Horses**, creates a more varied habitat showing improved vegetation health and biodiversity. This highlights the significant impact of diverse herbivore populations on ecological restoration.

As rewilding efforts continue, understanding the ecological roles of these species will be key to enhancing the resilience and biodiversity of the Danube Delta wetlands. Continued monitoring such as camera trap data and field observations provide valuable insights and focused research are essential to address the challenges posed by habitat destruction and invasive species.



VIETNAM

U MINH WETLAND CONSERVATION

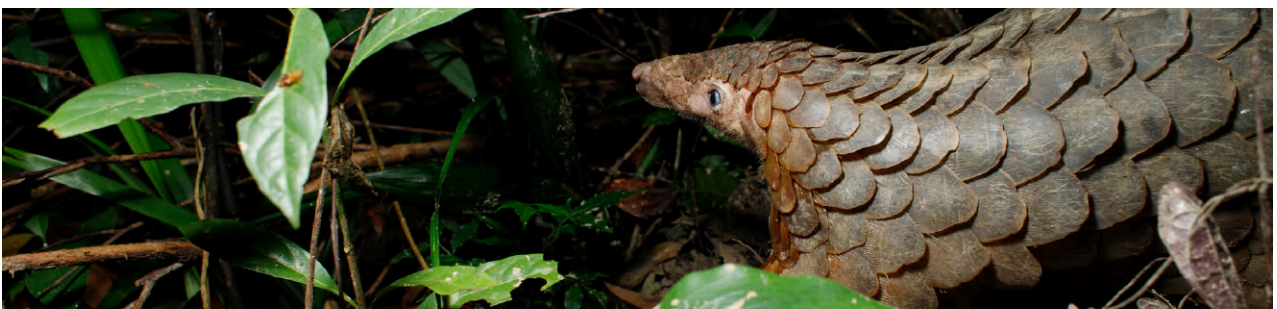
Understanding the ecological roles & rewilding efforts in the U Minh Wetlands



The U Minh Wetlands, located in southern Vietnam within the Greater Mekong Subregion, are a seasonally inundated area historically characterized by *Melaleuca* forests, reed meadows, and swamps. These wetlands have undergone significant ecological degradation due to forest fires, poor management, and human interventions such as agriculture and plantation development. Efforts to manage peat degradation and fire risks through canal systems have inadvertently disrupted the natural hydrology, leading to uneven water distribution and increased fire risks. The original native forests have largely been replaced by plantations of acacia, guava, and banana, with the remaining, but highly fragmented, *Melaleuca* forests recovering slowly.

Rewilding and conservation efforts in the U Minh Wetlands have been actively pursued through ecological assessments since the 2000s, focusing on species status, population distribution, and impact analysis. The ecosystem, is gradually recuperating.

Wildlife in U Minh, such as **Waterbirds, Sunda Pangolins, Otters, Civets, Turtles,** and **Long-Tailed Macaques** play significant roles as ecosystem engineers, influencing habitat structure and nutrient cycling. These species also contribute to seed dispersal, maintaining plant diversity and aiding in ecological recovery. **As conservation efforts continue, understanding the ecological roles of these species will be key to enhancing the resilience and biodiversity of the U Minh wetlands.**



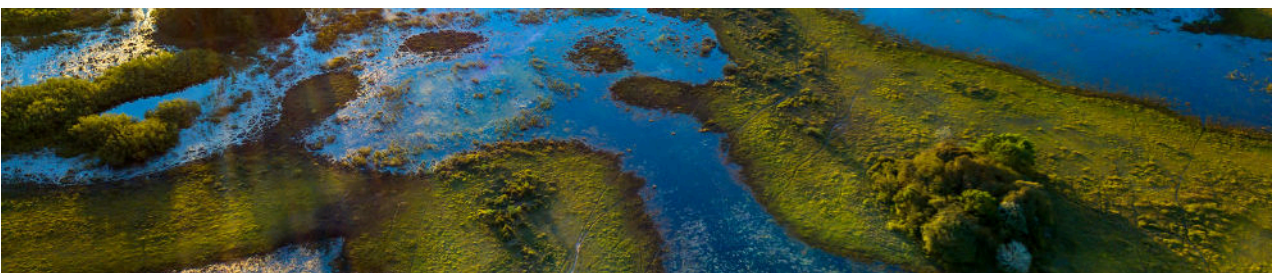
CONNECTING EFFORTS FOR A RESILIENT FUTURE

These detailed case studies from our alliance partners highlight diverse strategies and outcomes across the globe, showcasing the **extensive and impactful work being done to restore and conserve natural habitats**. By reintroducing key species and restoring habitats, our partners have taken significant steps towards reversing biodiversity loss and enhancing ecosystem services that benefit both nature and humanity.



A HEARTFELT THANKS TO OUR ALLIANCE PARTNERS

We extend our deepest gratitude to all our alliance partners who represent these vital case studies. Their dedication and hard work underpin the success of these global rewilding efforts, making a significant impact on conservation and ecological restoration. Their innovative approaches and relentless pursuit of ecological health are inspiring a brighter future for our planet.



JOIN US AS WE BUILD THE HOPEFUL, GROWING GLOBAL REWILDING MOVEMENT

The mission of Global Rewilding Alliance is to help build the global rewilding movement with the aim to mainstream rewilding in science, policy and practice globally by 2030.

The Alliance is a partnership of rewilding organisations, with 225+ Alliance Partners worldwide working across all continents. Together, they are currently helping to influence the rewilding of 2.2 million sq.km of land and 5 million sq.km of sea in 124 countries.

WE ARE INCREDIBLY GRATEFUL TO OUR CHAMPIONS
FOR THEIR CORE SUPPORT OF OUR WORK



BIOPHILIA FOUNDATION



BEN GOLDSMITH | ANDRÉ HOFFMANN



Summary of 'TAKING ANIMALS INTO ACCOUNT' - Case Studies

Published February 2025

© Global Rewilding Alliance
www.globalrewilding.earth

Partner with



HIGH AMBITION COALITION
FOR NATURE AND PEOPLE



UNITED NATIONS DECADE ON
ECOSYSTEM
RESTORATION
2021-2030